

Claims

1. A method of transporting and storing a wind turbine blade (1) including a blade root (10) and a blade tip (4), where the wind turbine blade curves in the unloaded state in such a manner that the blade (1) presents a substantially concave face (30) and a substantially convex face (12), and such that said blade tip (4) is spaced apart from the longitudinal central axis (28) of said blade root (10), **characterised in that** the wind turbine blade (1) is prestressed by means of prestressing means (2, 5, 6, 9, 13, 16, 17, 21, 22, 23, 24, 25, 26, 33) at a distance from the blade root (10) in such a manner that the blade tip (4) is brought closer to the longitudinal central axis (28) of the blade root (10).
2. A method according to claim 1, **characterised in that** the wind turbine blade (1) is prestressed to such an extent that the distance between the blade tip (4) and the longitudinal central axis (28) of the blade root (10) does not exceed twice the radius (32) of the blade root (10), more preferably not exceeding the radius (32) of the blade root (10).
3. A method according to claim 1 or 2, **characterised in that** the prestressing means include a counterpart (2, 33) extending parallel to the blade, said prestressing means further including prestressing members (5,6) for forcing the substantially concave face of the wind turbine blade (1) towards the counterpart (2, 33).
4. A method according to claim 3, **characterised in that** the counterpart (2) is resilient and curved and is positioned parallel to the wind turbine blade (1) in such a manner that said counterpart curves in a direction opposite the wind turbine blade (1), whereby the counterpart (2) and the wind turbine blade (1) are forced towards each other by means of the prestressing members (5, 6).

5. A method according to claim 3, **characterised in that** the counterpart (33) is substantially rectilinear and substantially rigid, and that the wind turbine blade (1) is forced towards the counterpart (33) by means of the prestressing members (5, 6).
- 5 6. A method according to one of the claims 3 to 5, **characterised in that** the counterpart (2, 33) include abutment members (3) with a surface corresponding to the surface of the blade (1) and preventing said wind turbine blade (1) from being damaged.
- 10 7. A method according to claim 4, **characterised in that** the resilient counterpart is formed of a second curved wind turbine blade (1) upended in relation to the first blade (1), whereby the roots (10) of the two blades are secured in respective first frames (25), and whereby the tips (4) of the two blades are secured in respective second frames (26), and where said first frame (25) of said first blade (1) and said
15 second frame (26) of said second blade (1) are secured to each other, and where said second frame (26) of said first blade (1) and said first frame (25) of said second blade (1) are subsequently forced towards each other and secured to each other.
8. A method according to claim 1 or 2, **characterised in that** the prestressing means
20 include a cable (9) secured to the blade (1) at a position adjacent to the blade tip (4) and positioned so as to extend along the convex face (12) of the blade (1), said cable (9) being tightened in such a manner that the blade tip (4) is arranged closer to the longitudinal central axis (28) of the blade root (10).
- 25 9. A method according to claim 8, **characterised in that** blade tip fittings (16) for the blade are fastened adjacent to the blade tip (4), the cable (9) being secured to said fittings.
10. A method according to claim 8 or 9, **characterised in that** cable guide fittings
30 (13) are fastened between the blade tip (4) and the blade root (10), the cable (9) abutting said cable guide fittings at a distance from the surface of the blade (1) to

ensure the effect of a compressive force component perpendicular to the convex face (12) of the blade (1).

11. A method according to claims 9 and 10, **characterised in that** the blade tip fittings (16) and the cable guide fittings (13) are inter-connected by means of hinges (29) with a distance beam (18) ensuring a constant distance between said blade tip fittings (16) and said cable guide fittings (13).

12. A method according to claim 1 or 2, **characterised in that** the blade (1) is positioned with the substantially concave face (30) facing downwards and that at least the blade root (10) is supported, the prestressing means being formed by ballast means (21, 31) positioned on or in the blade (1) at a distance from the blade root (10).

13. A method according to one of the preceding claims, **characterised in that** the blade (1) is transported in its prestressed state by means of a tractor unit (19) and a trailer or semi-trailer (31), optionally formed integral with a counterpart towards which the blade (1) is forced.

14. A wind turbine blade (1) including a blade root (10) and a blade tip (4), where the wind turbine blade curves in such a manner that the wind turbine blade (1) in the unloaded state presents a substantially concave face (30) and a substantially convex face (12), and such that said blade tip (4) is spaced apart from the longitudinal central axis (28) of said blade root (10), **characterised in that** the blade (1) is provided with inner ballast tanks (21) at a distance from the blade root (10), said tanks being adapted to being filled with ballast material, such as water or flowable material, in such a manner that the blade tip (4) is brought closer to the longitudinal central axis (28) of the blade root (10) due to gravity on the ballast, when the blade (1) is positioned with the substantially concave face (30) facing downwards and is supported adjacent to the blade root (10) and optionally the blade tip (4).

15. An apparatus for transporting and storing a wind turbine blade (1) including a blade root (10) and a blade tip (4), where the wind turbine blade curves in its unloaded state in such a manner that the blade (1) presents a substantially concave face (30) and a substantially convex face (12), and such that said blade tip (4) is
5 spaced apart from the longitudinal central axis (28) of said blade root (10), **characterised in that** said apparatus includes prestressing means (2, 5, 6, 9, 13, 16, 17, 21, 22, 23, 24, 25, 26, 33) for loading the blade (1) at a distance from the blade root (10) in such a manner that the blade tip (4) is brought closer to the longitudinal central axis (28) of the blade root (10).

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16. An apparatus according to claim 15, **characterised in that** the prestressing means include a counterpart (2, 33) adapted to being arranged parallel to the blade, said prestressing means further including prestressing members (5, 6) for forcing the substantially convex face of the blade (1) towards the counterpart (2, 33).

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17. An apparatus according to claim 16, **characterised by** including root fittings (11) adapted so as to allow a blade root (10) to be fixedly supported thereon.

18. An apparatus according to claim 16, **characterised in that** the counterpart is in
20 the form of a trailer or a semi-trailer (20) adapted to being pulled by a tractor unit (19).

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